The listing of claims will replace all prior versions and listings of claims in the application:

**Listing of Claims:**

Claim 1 (Original) A quantum well infrared photodetector comprising:

a plurality of doped quantum well layers forming a multi-quantum well structure for providing high absorption at temperatures other than low temperatures; and,

contact layers for receiving current from the plurality of quantum well layers.

Claim 2 (Original) A quantum well infrared photodetector according to claim 1 wherein the multi-quantum well structure is for providing high absorption at temperatures near room temperature.

Claim 3 (Original) A quantum well infrared photodetector according to claim 2 wherein the plurality of doped quantum well layers includes more than 10 quantum well layers.

Claim 4 (Currently amended) A quantum well infrared photodetector according to claim 3 wherein the ~~dopant concentration~~ doping density is selected to be sufficiently large for high absorption during near room temperature operation.

Claim 5 (Original) A quantum well infrared photodetector according to claim 4 wherein the doping density (Nd) is given by $Nd=(m/\pi\leftarrow^{2})(2k_BT)$, where m is the effective mass, $\leftarrow$ is the Planck constant, $k_B$ is the Boltzmann constant, and T is the desired operating in degrees K.

Claim 6 (Original) A quantum well infrared photodetector according to claim 5 wherein the well material is GaAs, the barrier material is Al GaAs, and the operating temperature is room temperature and Nd is in the range of $1 - 2E12\ cm^{-2}$.

Claim 7 (Original) A quantum well infrared photodetector according to claim 6 wherein the contact layers are formed of GaAs doped with Si to a concentration of 1E17 to 5E18 $cm^{-3}$.

Claim 8 (Original) A quantum well infrared photodetector comprising:

a plurality of doped quantum well layers forming a multi-quantum well structure for providing high absorption and dark current at temperatures other than low temperatures; and,

contact layers for receiving current from the plurality of quantum well layers.

Claim 9 (Original) A quantum well infrared photodetector comprising:

a plurality of quantum well layers formed of a first semiconductor material and doped forming a multi-quantum well structure for providing high absorption at temperatures other than low temperatures and substantial dark current;

barriers between the quantum well layers formed of a second semiconductor material; and,

contact layers comprising a third doped semiconductor.

Claim 10 (Original) A quantum well infrared photodetector according to claim 9 wherein temperatures other than low temperatures include temperatures at or near room temperature.

Claim 11 (Original) A quantum well infrared photodetector according to claim 10 wherein the first semiconductor material is GaAs.

Claim 12 (Original) A quantum well infrared photodetector according to claim 11 wherein the dopant for doping the first semiconductor material is Si.

Claim 13 (Original) A quantum well infrared photodetector according to claim 12 wherein dopant concentration of the Si is approximately 1 – 2E12 $cm^{-2}$.

Claim 14 (Original) A quantum well infrared photodetector according to claim 13 wherein second semiconductor material is Al GaAs.

Claim 15 (Original) A quantum well infrared photodetector according to claim 14 wherein fraction of Al is from 10%-50%.

Claim 16 (Original) A quantum well infrared photodetector according to claim 15 wherein the third doped semiconductor material is GaAs doped with Si.

Claim 17 (Original) A quantum well infrared photodetector according to claim 16 wherein the third doped semiconductor material is doped with Si to a concentration of 1E17 to 5E18 $cm^{-3}$.

Claim 18 (Original) A quantum well infrared photodetector according to claim 17 wherein the third doped semiconductor material of a thickness within a range of 0.1-2 μm.

Claim 19 (Currently amended) A quantum well infrared photodetector according to claim 8 wherein the plurality of doped quantum well layers is designed for operation at frequencies above 1 ~~GigaHz~~ GHz.

Claim 20 (Currently amended) A quantum well infrared photodetector according to claim 19 wherein the plurality of doped quantum well layers is designed for operation at frequencies above 30 ~~GigaHz~~ GHz.

Claim 21 (Original) A method of detecting infrared radiation comprising the steps of: detecting infrared radiation with a quantum well device absent cryogenic cooling; and, determining an intensity of the detected infrared radiation.

Claim 22 (Currently amended) A method of detecting infrared radiation according to claim [[19]] 21 wherein the step of determining comprises the step of:

filtering the dark current component of the detected signal to determine an intensity of the detected infrared radiation.

Claim 23 (Currently amended) A method of detecting infrared radiation according to claim [[19]] 21 wherein the step of detecting is performed at or near room temperature.